

EU-Southeast Asia S&T collaboration for food security: CIRAD experience



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Intricate future requires collaborative research



- Asia-Pacific region homes 57% of the world population but 73% of world agricultural population for only 1/3 of world farmland....
- Asia-Pacific region export large quantities of staple food products to Europe : 90% of world rice production, 40% of cereal, 40% of meat, 70% of global market vegetables and 80% of aquaculture.
- For both SEA and Europe, a clear benefit arises from providing high quality and affordable food along the whole agrifood chain

ENGAGE: EU and SEA must act together in Research and Innovation on Food and Agriculture

CREATE: Competitiveness, jobs, sustainable growth and social progress



- ❖ High density of population and the presence of 642 million people living below the poverty line
 - Increasing food and nutrition insecurity
 - Increasing land pressure on available land (deforestation, competition between food and energy crops, competition for water resources...)
- ❖ Strong impact of the global economic crisis and market instability: A 10% increase in food prices leads to 64 million more people into extreme poverty



- ❖ Rapid growth of urbanization: in 2050, 63% of the population in Asia will live in urban areas
 - Rising affluence amongst the middle classes associated with changes in food consumption patterns
- ❖ Strong impact of climate change: Pacific positioning and level topology of the ASEAN region
 - Crops vulnerable to typhoons and El Nino Southern Oscillation (ENSO)
 - Increased flooding, salinity and long droughts

Cirad: A public mandate for agricultural research



- CIRAD is the French Agricultural Research Centre for International Development

- A public research centre working with developing countries to tackle international agricultural and development issues.

- Research programs at CIRAD involve life sciences, social sciences and engineering sciences, applied to agriculture, food and rural territories.

- A staff of 1800, including 800 research officers.

- Joint operations with more than 90 countries.

- 12 regional offices in metropolitan France, the French overseas regions and tropical countries.

- A 197 million € budget in 2014.

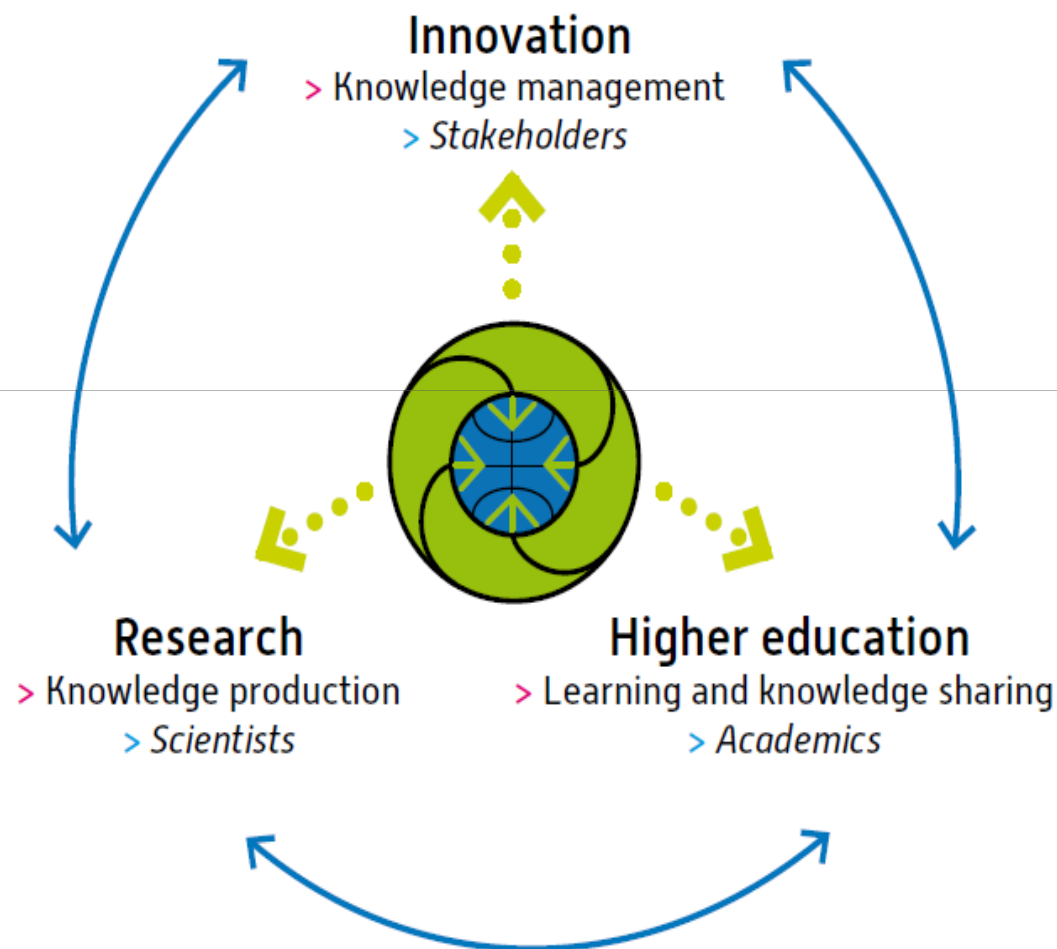
- 5 million € spent on PhD training for 800 research and technical staff worldwide.



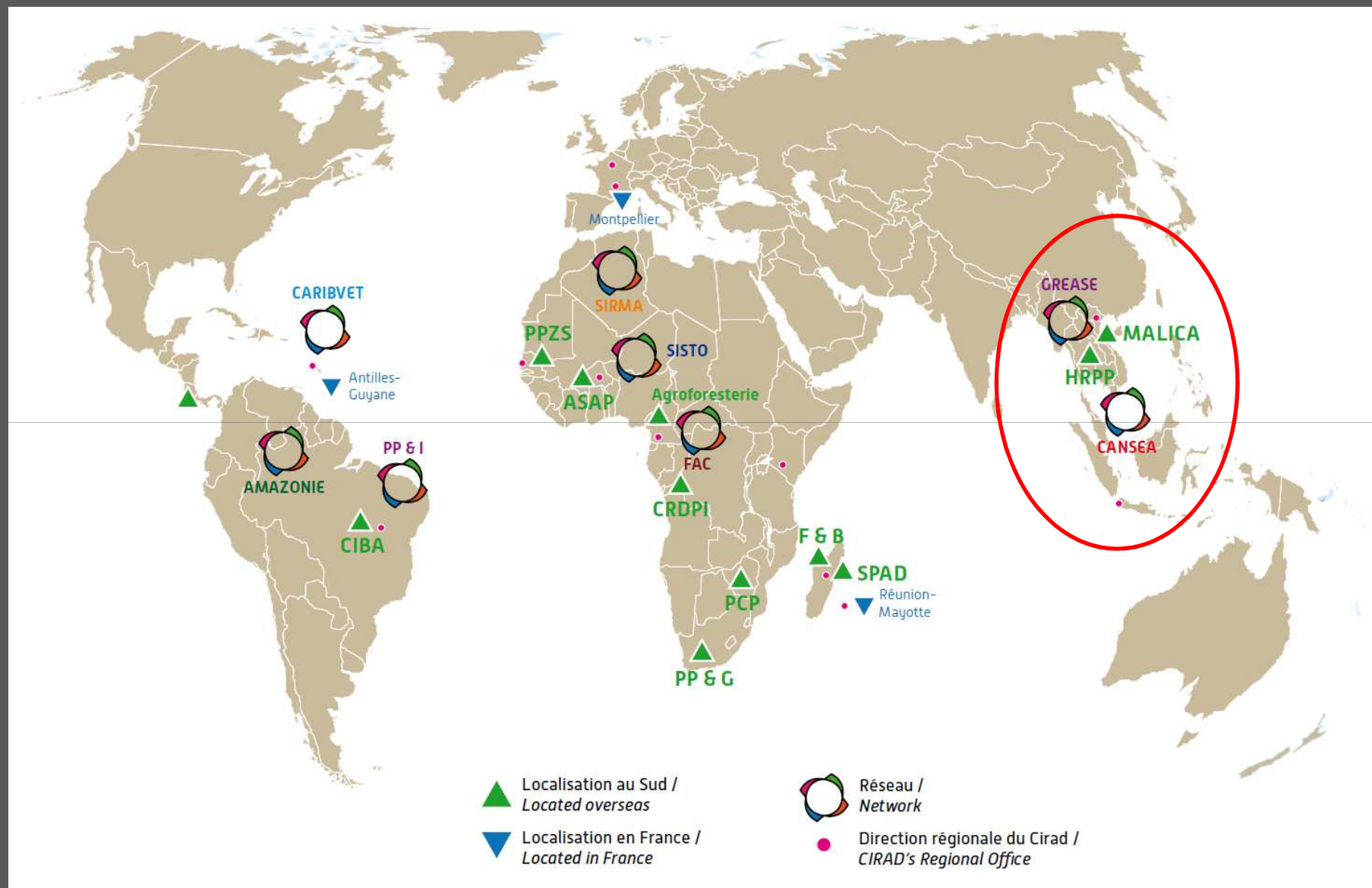
- Mobilization and concentration research strengths
- A limited number of priority research initiatives in partnership
- In line with CIRAD scientific priorities, partners and resources
- A shared scientific projects established between national and regional partners and CIRAD.
- Organized either as research and training platforms or dynamic and flexible networks
- Of perennial nature, based on multilateral agreements between the participating institutions
- Mutual governance bodies subjected to periodic evaluations on a quadrennial basis.

A Platform in Partnership for research and training

- A group of partners and the desire to work together
- Shared outlooks and objectives
- The long-term commitment of human, material and financial resources to achieve the objectives
- A shared research theme
- A defined geographical area
- A critical mass of multiple competences and activities.



14 Partnership Platforms worldwide



4 Partnership Platforms in SEA



- Founded in 2009 from partnership since 2005
- Based in Vietnam, joining Cirad with Vietnam Academy of Agricultural Sciences and National University of Laos
- Builds and reinforces the capacity of students, academics, public bodies and private stakeholders
- Food markets and city/country relationship with Two priority research fields:
 - Increasing quality in the food sector
 - Comparative advantages of periurban and rural flows.
- Application to the vegetable, pork and maize supply chains
- Impact of different types of distribution chains on poverty alleviation.



Members

- o **CASRAD** (Centre for Agrarian Systems Research and Development), part of FCRI (Food Crops Research Institute)
- o **FAVRI** (Fruits and Vegetables Research Institute),
both members of **VAAS** (Vietnam Academy of Agricultural Sciences, Vietnam)
- o **RUDEC** (Rural Development Centre) a member of **IPSARD** (Institute of Policy and Strategies for Agriculture and Rural Development, Vietnam)
- o **CIRAD** (Centre de Coopération Internationale en Recherche Agronomique pour le Développement), France
- o **NUOL** (National University of Laos) - Faculty of Agriculture

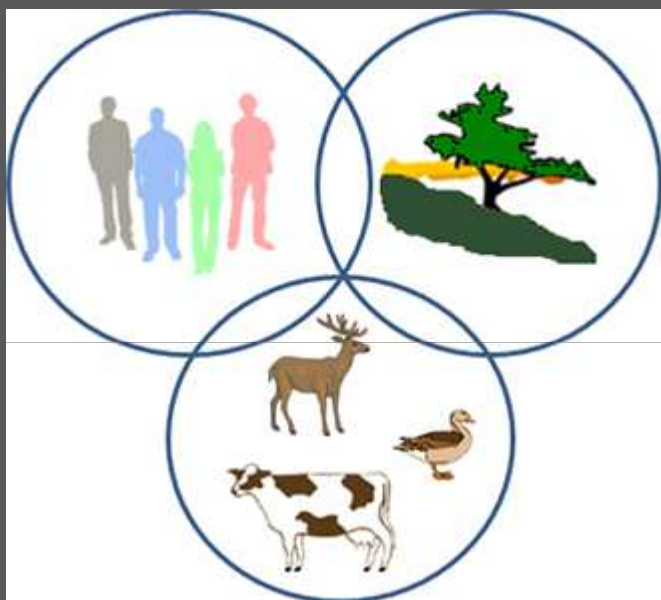



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- MALICA was created in 2002 by **CIRAD**, **VASI** and **FAVRI**.
- **CIRAD** was the coordinator from 2002 to 2006.
- After signing of MoU in 2006 by **VAAS**, **IPSARD** and **CIRAD**, **CASRAD** was in charge of the coordination up to 2008
- In 2009, this mission is transferred to **RUDEC**.

Management of Epidemiological Emerging Risks in Southeast Asia



Human health, animal health, and ecosystem health are inextricably linked

- Following the *One Health* approach
- GREASE is a **regional network** aimed at supporting Research Activities for a better **Management of Epidemiological Emerging Risks in Southeast Asia**.
- It deals with **emerging transboundary animal infections and zoonotic diseases**.
- GREASE was designed as a research and training platform implemented by CIRAD and partners in **Thailand, Cambodia, Vietnam, Laos and the Philippines**.

Partners



National Veterinary Research Institute >
Cambodia (NAVRI)



National Institute of Veterinary Research >
Vietnam (NIVR)



Central Mindanao University >
Faculty of Veterinary Medicine,
Philippines (CMU)



Kasetsart University >
Faculty of Veterinary Medicine,
Thailand (KU)



National University of Laos >
Faculty of Agriculture (NUOL)



CIRAD > Internal Research Units: AGIRs,
GREEN; Joint Research Units: INTERTRYP,
MOISA, QUALISUD



Associates

Southeast Asia > Institut Pasteur (Cambodia);
Thammasat, Chiang Mai, Khon Kaen and Mahidol
Universities, Thailand; University of Gadjah Mada
(Indonesia); University of Hong Kong; Asian
Institute of Technology (AIT); national
veterinary services.

Extension of the network's activities to other
organizations in southern Malaysia and the
Philippines is under way.

France > IRD, CNRS, ENVT.

Worldwide > OIE, FAO Emergency Centre for
transboundary animal diseases; FAO Regional
Office for Asia and the Pacific (ECTAD-RAP).



- 6 core members SEA (MoU)
- 20 associated partners
(Regional - International)



Projects (examples)



Companion approach for cross-sectoral collaboration in health risk management • ComAcross, European Union, 2014–2018, € 2.2M

The overall aim is to build capacity and share knowledge among various One Health stakeholders through field work (heterogeneous data management) and training (academic and vocational). The project implemented a case study-based approach addressing: 1) the management of health risks associated with flooding (Thailand); 2) Japanese encephalitis dynamics (Cambodia); 3) parasitic zoonoses of livestock in small-scale farming systems (Laos); and 4) Nipah virus dynamics (on a regional scale) within the framework of a One Health/Ecohealth approach.



Local impacts of global change: biodiversity, health and zoonoses • BiodivHealthSEA, ANR-France, 2012–2015, € 521k

Rodents are reservoirs of major zoonoses (leptospirosis, scrub typhus, etc.). In Southeast Asia, they are also good indicators of modifications in the natural habitat and in the interactions between humans and their environment. The aim is to obtain original data on the relations between biodiversity conservation, land occupation, local farming practices and risk perceptions, and disease spread.



Assessment of surveillance systems in Southeast Asia • REVASIA, MAAF and AFD-France, 2008–2017, € 465k

The aim is to develop generic tools for the assessment and modelling of animal disease surveillance systems (notably avian influenza) that could be applied in both industrialized and developing countries. The project is working on methods that combine veterinary and human medicine approaches, and multi-agent models.



Reducing the morbidity and mortality associated with infectious encephalitis • Southeast Asia encephalitis, SEAE, 2012–2017, €1.3M

This project, coordinated by the Institut de Pasteur in Paris, aims to reduce morbidity and mortality resulting from infectious encephalitis in Southeast Asia. In many cases, little is known about the causes of these diseases, which may be down to various pathogens, including emerging ones. It is mainly the poorest people who suffer the consequences, since they have limited access to health care systems.

Scientific Production in 2011-2014

- >120 Articles peer review journals published or In press.
- >18 Book chapters
- >40 Communications to International Conferences (EcoHealth, ICAHS, ICT, ISVEE, PENAPH, STVM, PUP, ...)
- Master students supervision
- 7 PhD students supervision (ongoing)

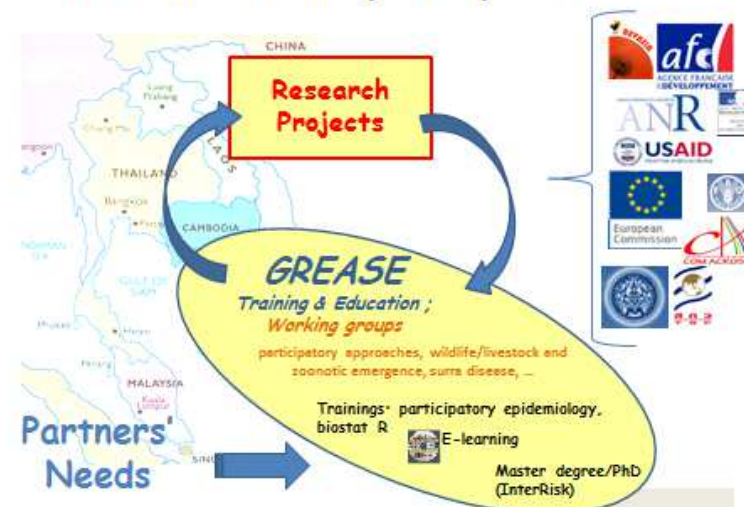


Optimizing early detection of avian influenza (H5N1) in backyard and free-range poultry production systems in Thailand
J. Besser*, J. Bouvier*, J. Goulet*, J. Huet*, J. Roger*, A. Goulet*



Evaluating the efficiency of participatory epidemiology to evaluate the incidence and aspects of risk and health disease among livestock owners in Cambodia
J. Besser*, J. Bouvier*, J. Goulet*, J. Huet*, J. Roger*, A. Goulet*

GREASE: an adaptive process...





Beneficiaries

Scientists and decision-makers will boost their knowledge of the dynamics of emergence and transmission and develop surveillance tools.

French and Asian students will benefit from training that enables them to take an integrated approach to health risk analysis, within a One Health conceptual framework.

Human and veterinary public health, environment and rural development stakeholders will be backed up by knowledge and data that take account of the epidemiological, socio-economic and environmental data for Southeast Asia.

Producers, livestock supply chain operators, the authorities and local communities will build their skills and organize epidemic surveillance and prevention.

- Analysing and assessing health surveillance systems

Under a multidisciplinary and cross-sectoral framework

- Interactions between biodiversity and health:

Analysis and perception of health risks at the animal/human/environment interface

- Assessment of the surveillance, control and impact of animal diseases and zoonoses,

Multi-stakeholders' risks perception of risks and management schemes.

- Participatory approaches and modelling tools to address health risks within a One Health approach: capacity building

Vocational training and higher education

- One Health Education:

“InterRisk” International Master coordinated by CIRAD.



- Founded in 2009
- The CANSEA platform joins seven institutional partners in Cambodia, China, Indonesia, Laos, Thailand and Vietnam with Cirad
- Conservation Agriculture aims at restoring degraded environments
- Challenges in SEA:
 - i) The restoration of degraded areas
 - ii) To provide an smart and sustainable alternative to slash & burn practices
 - iii) the training of staff and technicians to practice this new form of agriculture.



Height founding members:

- **Cambodia:** Ministry of Agriculture, Forestry and Fisheries (MAFF)
- **China:** Yunnan Academy of Agricultural Sciences (YAAS)
- **Indonesia:** Indonesian Agency for Agriculture Research and Development (IAARD)
- **Laos:** National Agriculture and Forestry Research Institute (NAFRI)
- **Thailand:** Kasetsart University (KU)
- **Vietnam:** Northern Mountainous Agriculture and Forestry Science Institute (NOMAFSI) - Soils and Fertilizers Research Institute (SFRI)
- **France:** CIRAD

Activities	China (Yunnan)	Vietnam	Laos	Thailand	Cambodia
Specific activities	<ul style="list-style-type: none">• Agricultural Engineering to develop small scale resilient Farming systems for Mountainous areas (uplands and sloping lands)		<ul style="list-style-type: none">• Fertility restoration of degraded soils (Erosion, acidity & salinity...)• Diversification of cropping systems Intensification of Rice based cropping systems• Developing sustainable cropping systems for uplands rain-fed areas		
	<ul style="list-style-type: none">• Land degradation (Erosion)		<ul style="list-style-type: none">• Animal production	<ul style="list-style-type: none">• Development of CA academic training (KU-CSC)	<ul style="list-style-type: none">• Methodological approach for CA development & dissemination
National Partnership	YAAS-AERI Wenshan Gov.	NOMAFSI	MAF DALaM department Agric Fac Nabong & Savannakhet	Katsetsart University Land DD Khon Kaen	GDA-PADAC URA
International Cooperation	CIRAD Technical Assistance to support North Vietnam & Yunnan (China) “CA development to intensify and diversify farming systems in traditional Mountainous areas”		CIRAD Technical Assistance to support Cambodia + Laos + Thailand component “CA development to improve or restore soil fertility for intensification and diversification of production”		
	CIRAD Technical Assistance to support CANSEA for the regional coordination of the South East Asia sub regional program to develop and disseminate CA.				

CANSEA training strategy will result from three types of actions:

- Facilitating the access to information
- Creating and supporting collective thinking at all steps of program implementation
- Organizing training sessions covering techniques, management, legal aspects...





They are all different

- Come in various size and colours
- Are definitely out of infancy
- Can gather various groups of stakeholders
- Are living adaptable organisms
- Maintain permanent brainstorming

They share many common traits

- Tackle key agricultural issues in SEA
- Revolving chairs governance
- Generate world-class research results
- Importance of training and capacity building
- Provide an education to collaborative research
- Prepare partnership to burgeoning projects
- Inclusive approach of collaborative research



MALICA

<http://www.malica-asia.com/>

GREASE

<http://www.grease-network.org/>

CANSEA

<http://cansea.org.vn/>

Thank you for kind attention

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